PIR OCCUPANCY SWITCHES

PIR occupancy switches

The DANLERS range of Passive infra-red occupancy switches is designed for the automatic control of lighting, heating, ventilation or air conditioning loads.

The PIR switch will switch on the connected load automatically when an area is occupied, and then switch it off automatically when the area has been vacant for a chosen duration. This has the benefits of reduced energy bills and automatic control. When being used to control lighting, the built-in photocell can be used to keep the lights off on bright days.

PIR occupancy switches are ideal for:

- **Offices**
- **Factories**
- **Warehouses**
- **Schools**
- **Leisure centres**
- **Hospitals**
- **Canteens**
- **Staff rooms**
- **Corridors and stairwells**
- **Residential homes**
- **Military accommodation**
- **Student accommodation**
- **Toilet blocks**
- **Changing rooms**
- **Plus many other uses**

PIR occupancy switch functions

Simple adjustment spindles

Each PIR occupancy switch in the DANLERS range has a passive infra-red quad person detector. This detects the movement of a warm body, moving within its detection zone. When such a movement is detected the load is switched on. There is a time lag function, which is adjustable by a spindle in the side of the product. The time lag is the time that must elapse with no movement detected before the PIR occupancy switch will switch off.

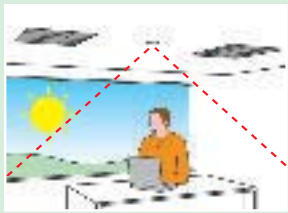
There is a built-in adjustable photocell override, which can be used to keep lights off when there is sufficient daylight available. The photocell can only be used in this way if the amount of natural daylight exceeds the level of the artificial lights. The photocell can be set to inactive when controlling heating, ventilation or air conditioning. The photocell also is adjusted by a spindle in the side of the product.

Each PIR occupancy switch contains a relay suitable for switching any type of load, including fluorescent lights and fans.
Any number of PIR occupancy switches may be wired in parallel, to control the same load. (There are, however, minimum load restrictions with the WAPIR model only.)

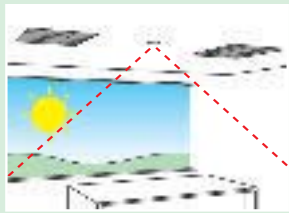
The PIR occupancy switches require a mains supply.

Function demonstrated with the lighting in an office

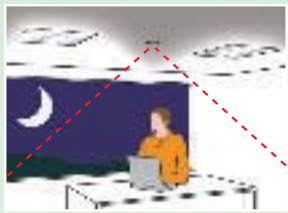
PIR switch brings lights on – only when needed



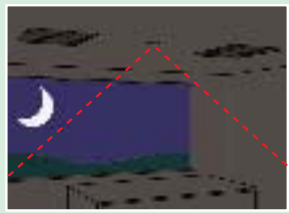
Enough daylight, Occupied – Lighting OFF



Enough daylight, Unoccupied – Lighting OFF



Night, Occupied – Lighting ON



Night, Unoccupied – Lighting OFF

PIR OCCUPANCY SWITCHES

PIR occupancy switch specifications

PIR detector

Passive infra-red quad detector.

Adjustable time lag

Time lag adjustable in 9 steps (approximate values):

10 seconds	1.25 minutes	10 minutes
20 seconds	2.5 minutes	20 minutes
40 seconds	5 minutes	40 minutes

Adjustable photocell

"Inhibit on" photocell. The photocell will inhibit the lights from switching on when somebody enters an area with plenty of ambient light. However, if somebody is already occupying an area and the lights are switched on, the lights will remain on while the area is occupied, regardless of any increase in the ambient light level. This is to avoid any nuisance switching off when somebody is in the middle of a task or meeting.

Range 100-1000 lux (and inactive), falling on the working plane.

Loading

All models can switch up to 6 amps (1500W at 230VAC) of any type of load, including fluorescent lights and fans. For the WAPIR model only, there are some minimum load requirements, detailed on page 19.

Wiring in parallel

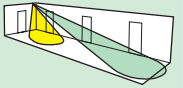
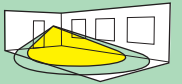
Several PIR switches can be wired in parallel to control the same load. Again for the WAPIR only there are some minimum load requirements, detailed on page 19.

Walk test

(Relevant to all models except WAPIR)

When the mains supply is initially connected to the PIR occupancy switch it goes through its Walk Test. This means it switches on for about 1 minute, then switches off and enters its automatic mode. If a manual wall switch is feeding the PIR occupancy switch (see wiring diagrams on appropriate product pages) then it will go through the Walk Test each time the wall switch is switched on.

By wiring the manual wall switch in the alternative position, the supply to the PIR occupancy switch is uninterrupted and it remains in automatic mode. It does not go through its Walk Test each time the wall switch is switched on.

CEILING MOUNTED								WALL MOUNTED	
360° detection zone						120° directional detection zone	Long range directional narrow beam	120° detection zone	
									
Flush mounted (false or plasterboard ceilings)				Surface mounted (solid ceilings)		Surface mounted	Surface mounted	Plaster depth (16mm) wall box	
Hard wired	Hard wired	Hard wired	Plug and socket	Hard wired	Plug and socket	Plug and socket	Plug and socket	Needs neutral wire	No neutral wire needed
									
CEFL PIR	**CEFL PIR SEALED**	**CEFL PIR 10A**	**CEFLP PIR + CESO**	**CESF PIR**	**CELO + CESO SQ**	**CEDR 6P + CESO**	**CEDR 6PLR + CESO**	**WACE PIR**	**WAPIR**
Page 12	Page 12	Page 12	Page 12	Page 13	Page 14	Page 16	Page 17	Page 18	Page 19

Application diagram

The diagram illustrates PIR occupancy switch siting within a typical office/ factory facility. The coloured zones emanating from the controls show strong detection zones (darker tints with solid coloured line) and secondary detection zones (lighter tint with broken coloured line).

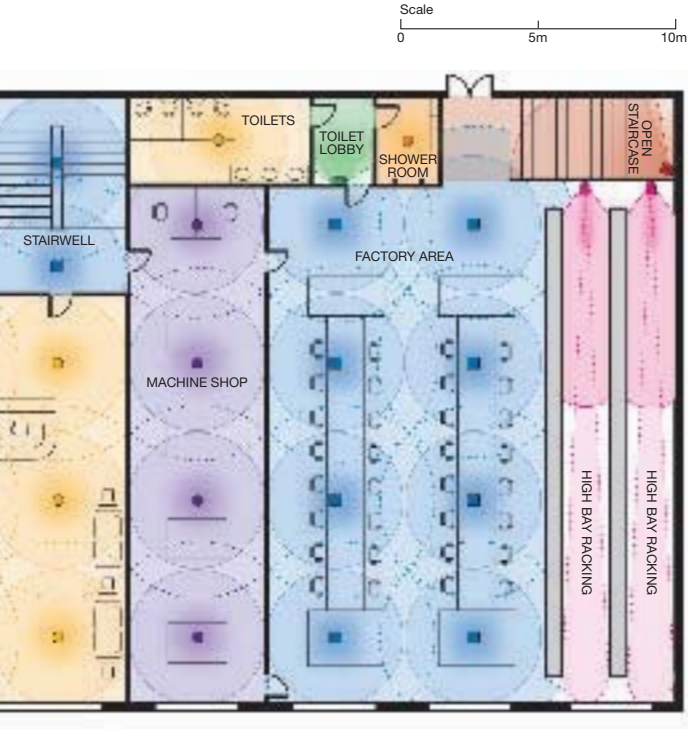
Ceiling flush mounted **CEFL PIR** spaced every 5 metres to cover the reception and open plan office and control the lights. The **CEFL PIR** can be wired in groups in parallel, to control the lighting in zones. Small offices are covered by a single ceiling flush mounted **CEFL PIR.**

In the small offices the wall switch has been replaced by a wall mounted **WAPIR**.

Long range directional **CEDR 6PLR** to detect people in the 25 metre corridor and the racking storage aisles.

Ceiling plug-in **CELO** mounted on BESA box on ceiling conduit. Spaced at 5 metre intervals to control the lights in the machine shop.

PIR OCCUPANCY SWITCHES



In the toilets a ceiling flush mounted **CEFL PIR** has been wired in parallel with a wall mounted **WACE PIR** in the lobby, to control the lighting in both rooms together.

In the shower room a **CEFL PIR SEALED** is protected against light splashes and condensation.

Two ceiling surface mounted **CESF PIR** (one on each landing) wired in parallel to control the lighting in the stairwell.

Ceiling surface mounted **CESF PIR** spaced every 5 metres to give total coverage of the open plan factory area.

Ceiling directional **CEDR 6P** covers the open staircase.

These neat and unobtrusive models are ideal for flush mounting through suspended or plasterboard ceilings.

Ceiling flush-mounted PIR switch

Order code:
CEFL PIR

Specification

Detection zone:	360° (see page 13 for diagrams)
Time lag range:	10 seconds to 40 minutes in 9 steps
Photocell range:	100 to 1000 lux, and inactive
Loading:	up to 6 amps (1500W) of any type of load (including fluorescent lights and fans)
Dimensions:	72 diameter x 68mm

Please see page opposite for detection diagrams

Order code:
CEFLP PIR

Special versions

Plug and socket version: CEFLP PIR

Model CEFLP PIR is provided with a plug suitable for the CESO Ceiling socket, shown on page 15.

CESO on a BESA box

Loading: Up to 6 amps (1500W) of any type of load (including fluorescent lights and fans)

Order code:
CEFL PIR SEALED

Splash-proof version: CEFL PIR SEALED

Model CEFL PIR SEALED is protected against light splashes and condensation, when installed in the ceiling. Ideal for bathrooms, shower rooms, etc.

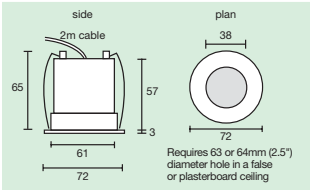
Loading: Up to 6 amps (1500W) of any type of load (including fluorescent lights and fans)

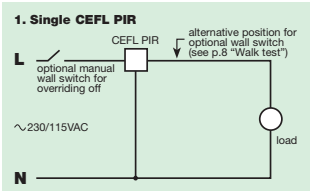
Order code:
CEFL PIR 10A

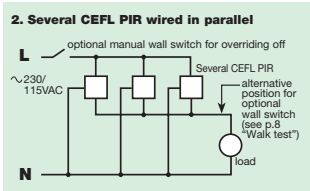
10 amp version: CEFL PIR 10A

Model CEFL PIR 10A is suitable for switching up to 10 amps (2500W) of any type of load (including fluorescent lights and fans).

Dimensions (mm) and wiring diagrams







These surface-mounted models are ideal for solid ceilings.

Ceiling surface-mounted PIR switch

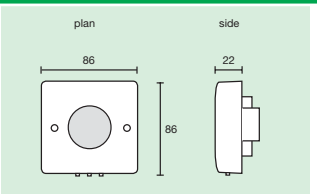
Order code:
CESF PIR

Specification

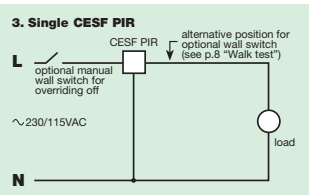
Detection zone:	360°
Time lag range:	10 seconds to 40 minutes in 9 steps
Photocell range:	100 to 1000 lux, and inactive
Loading:	up to 6 amps (1500W) of any type of load (including fluorescent lights and fans)
Dimensions:	86 x 86 x 22mm

Can be mounted on a square pattress box, order code: **PABO**.

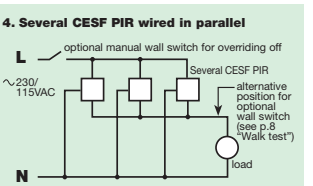
Dimensions (mm) and wiring diagrams



3. Single CESF PIR

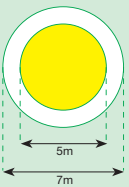


4. Several CESF PIR wired in parallel



Detection diagrams for CEFL PIR and CESF PIR

Plan view of detection zone

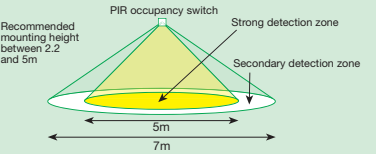


Strong detection zone i.e. person moving arm

Secondary detection zone i.e. person walking

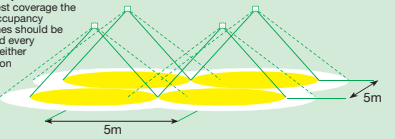
PIR Quad detector gives 124 detection areas within the zone

Perspective view of detection zone



Several PIR occupancy switches

In open plan areas
For best coverage the PIR occupancy switches should be spaced every 5m in either direction



These surface-mounted models are ideal for solid ceilings.

Ceiling surface-mounted plug-in PIR switch

Order code: **CELO**
Requires socket, order code: **CESO SQ** or **CESO**
(see page 15)

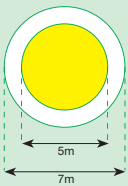
The CELO has a built-in plug suitable for the CESO SQ Ceiling socket (or CESO Ceiling socket). CESO SQ can be mounted on a square pattress box (or CESO can be mounted on a BESA box).

Specification

Detection zone:	360°
Time lag range:	10 seconds to 40 minutes in 9 steps
Photocell range:	100 to 1000 lux, and inactive
Loading:	up to 6 amps (1500W) of any type of load (including fluorescent lights and fans)
Dimensions:	88 x 88 x 47mm

Detection diagrams

Plan view of detection zone

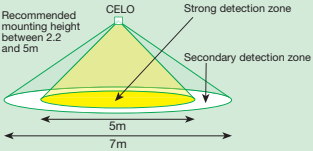


Strong detection zone i.e. person moving arm

Secondary detection zone i.e. person walking

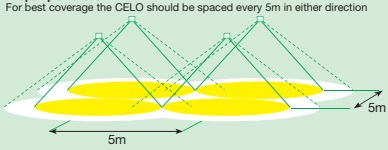
PIR Quad detector gives 124 detection areas within the zone

Perspective view of detection zone

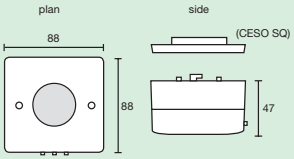


Several PIR occupancy switches

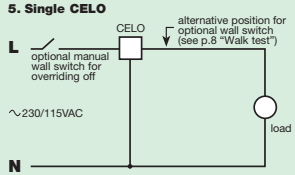
In open plan areas
For best coverage the CELO should be spaced every 5m in either direction



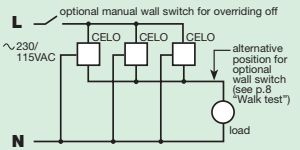
Dimensions (mm) and wiring diagrams



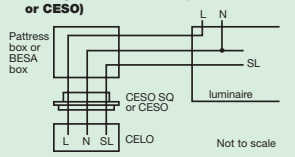
5. Single CELO



6. Several CELO wired in parallel



7. Ceiling mounted socket (CESO SQ or CESO)



Sockets for plug-in ceiling controls

Order code: **CESO**

Ceiling socket: CESO

For use with DANLERS plug-in ceiling controls. Can be mounted on a BESA box.

Dimensions: 74 diameter x 13mm

Also available as a square socket. Can be mounted on a square pattress box.
Order code: **CESO SQ**

Dimensions: 87 x 87 x 13mm

Slave relays for plug-in ceiling controls

Order code:
CESL or CE2SL

Ceiling socket with slave relay: CESL

Ceiling socket with slave relay with isolated changeover contacts. Enables the switching of an additional circuit with its own supply, e.g. the corridor lights outside an office; or a separate low voltage control circuit.

Dimensions: 87 x 87 x 41mm

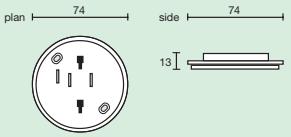
Ceiling socket with double slave relay: CE2SL

Ceiling socket with a double slave relay with isolated changeover contacts. Enables the switching of two additional circuits, each with its own supply, e.g. the corridor lights outside an office, plus the extractor fans inside the office. Also ideal for controlling two separate low voltage control circuits.

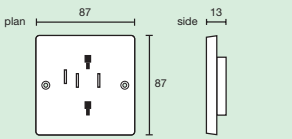
Dimensions: 87 x 87 x 41mm

Dimensions (mm) and wiring diagrams

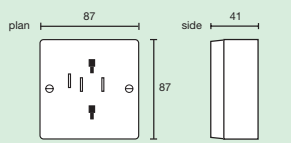
CESO



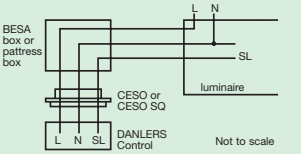
CESO SQ



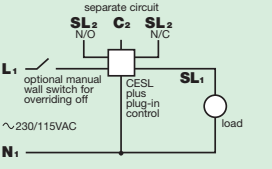
CESL / CE2SL



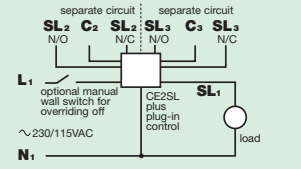
8. Ceiling mounted socket (CESO or CESO SQ)



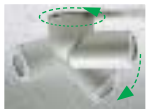
9. Plug-in control plus slave relay with volt free changeover contacts (CESL) controlling one extra circuit



10. Plug-in control plus double slave relay with volt free changeover contacts (CE2SL) controlling two extra circuits



These directional PIR switches plug into a ceiling mounted socket. The socket can be mounted on a BESA box.



Ceiling directional PIR switches

Standard range
Order code:
CEDR 6P
Requires socket, order code:
CESO
(see page 15)

Standard range version

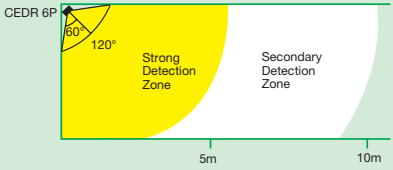
Designed to give a directional view of the activity to be monitored.
Detection angle 120°.
Can be rotated and lowered to a 45° angle.

Specification

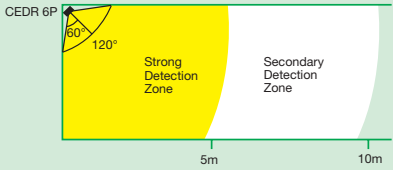
Time lag range:	10 seconds to 40 minutes in 9 steps
Photocell range:	100 to 1000 lux, and inactive
Loading:	up to 6 amps (1500W) of any type of load (including fluorescent lights and fans)
Dimensions:	see below

Detection diagrams

Standard range CEDR 6P

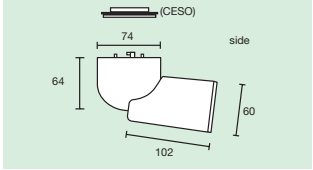


Plan view

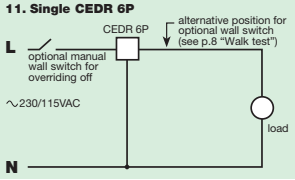


Side elevation

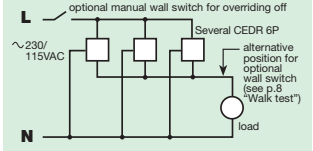
Dimensions (mm) and wiring diagrams



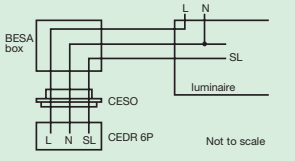
11. Single CEDR 6P



12. Several CEDR 6P wired in parallel



13. Ceiling mounted socket (CESO)



These directional PIR switches plug into a ceiling mounted socket. The socket can be mounted on a BESA box.

Ceiling directional PIR switches

Long range
Order code:
CEDR 6PLR
Requires socket, order code:
CESO
(see page 15)

Long range version

With a long range, narrow detection beam. Designed for corridors and storage aisles. Can be rotated and lowered to a 45° angle.

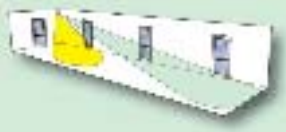
Specification

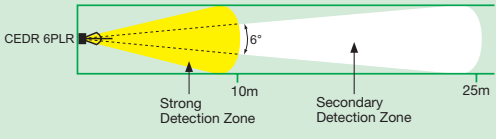
Time lag range:	10 seconds to 40 minutes in 9 steps
Photocell range:	100 to 1000 lux, and inactive
Loading:	up to 6 amps (1500W) of any type of load (including fluorescent lights and fans)
Dimensions:	see below

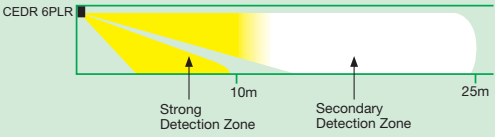
Detection diagrams

Long range CEDR 6PLR

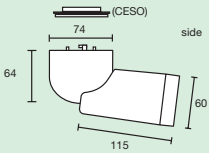
Ideal mounting height between 2.2 and 3m



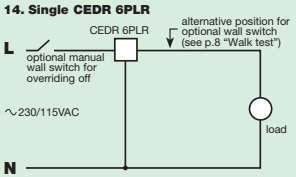




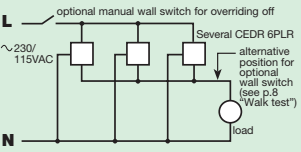
Dimensions (mm) and wiring diagrams



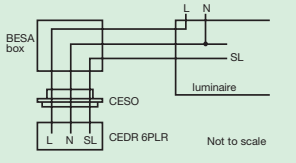
14. Single CEDR 6PLR



15. Several CEDR 6PLR wired in parallel



16. Ceiling mounted socket (CESO)



The WACE PIR is suitable for either wall or ceiling mounting. It fits either into a plaster depth (16mm) wall box or onto a ceiling mounted square pattress box. It requires a neutral wire.

Wall or ceiling mounted PIR switch

Order code:
WACE PIR

Applications

Suitable for stairwells, corridors, toilet lobbies, etc.

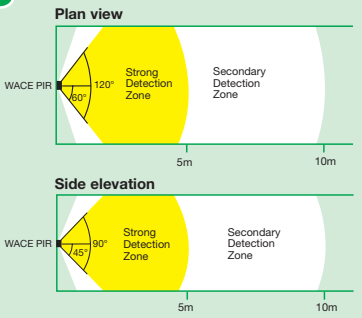
Specification

Detection zone:	120°
Time lag range:	10 seconds to 40 minutes in 9 steps
Photocell range:	100 to 1000 lux, and inactive
Loading:	up to 6 amps (1500W) of any type of load (including fluorescent lights and fans)
Dimensions:	86 x 86 x 22mm. Wall box depth 16mm

Detection diagrams

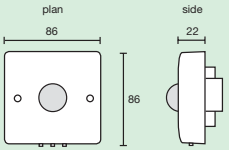
Wall mounted PIR

Ideal mounting height between 1 and 1.8m

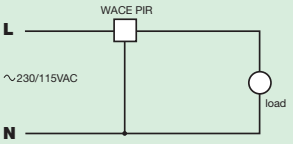


Dimensions (mm) and wiring diagrams

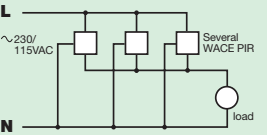
Requires 16mm box



17. Single WACE PIR



18. Several WACE PIR wired in parallel eg. in a stairwell



The WAPIR model replaces an existing wall switch – no neutral wire is needed. It fits into a plaster depth (16mm) wall box. The WAPIR model also has a manual override off switch on the front of the plate.

Wall mounted PIR switch

Order code: **WAPIR**

Applications

The WAPIR requires a permanent live supply, and should only be used in applications where the lights would not be on for more than 12 hours per day.
This is to allow its rechargeable battery enough time to recharge itself from the mains supply.
The WAPIR is suitable for small offices, meeting rooms, tutoring rooms, etc.
The override off button enables the lights to be held off during video presentations, etc.
For wall mounting only.

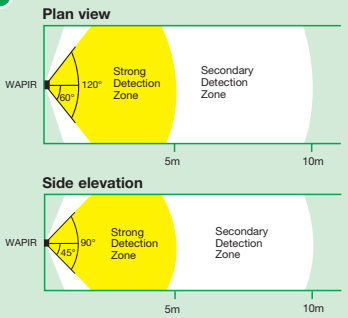
Specification

Detection zone:	120°
Time lag range:	10 seconds to 40 minutes in 9 steps
Photocell range:	100 to 1000 lux, and inactive
Maximum Load:	1500W (6 amps) of any type of load (including fluorescent lights and fans)
Minimum Load:	40W resistive or 100W inductive, or for wiring in parallel 50W resistive or 120W inductive per WAPIR in the circuit. Load capacitors (order code CAPLOAD) can be supplied to augment small loads
Dimensions:	86 x 86 x 22mm. Wall box depth 16mm

Detection diagrams

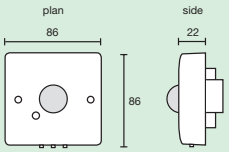
Wall mounted PIR

Ideal mounting height between 1 and 1.8m

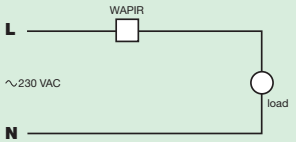


Dimensions (mm) and wiring diagrams

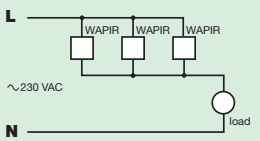
Requires 16mm wall box



19. Single WAPIR



20. Several WAPIR wired in parallel



PIR OCCUPANCY SWITCHES WITH DIMMING

Bring lights on – only when area is occupied. Automatically dim lights according to ambient light level, to maintain constant brightness of between 100 and 1000 lux (adjustable). Adjustable time lag before switching off. For suspended or plasterboard ceilings.

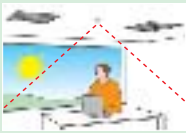
PIR occupancy switches with daylight linked dimming

Order code:
CEFL PIR DD 10VDC
CEFL PIR DD DSI

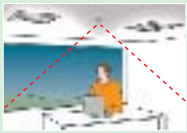
CEFL PIR DD 10VDC is suitable for dimmable ballasts with 1-10VDC input. CEFL PIR DD DSI is suitable for DSI dimmable ballasts.

Specification

Detection zone:	360°
Time lag range:	10 seconds to 40 minutes in 9 steps
Photocell range:	100 to 1000 lux, falling on the working plane
Loading:	CEFL PIR DD 10VDC: varies according to make and model of ballasts. Can control up to 20mA, eg. 20 ballasts at 1mA. (Control current of ballast is usually specified at 1-10V terminals.) CEFL PIR DD DSI can control up to 10 DSI ballasts.
Dimensions:	72 diameter x 68mm (see page 21)

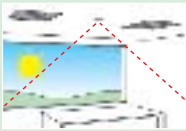


Enough daylight, Occupied – Lighting OFF



Reduced daylight, Occupied – Lighting DIMMED

Night, Occupied – Lighting ON



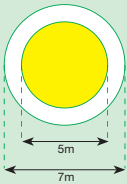
Enough daylight, Unoccupied – Lighting OFF

Reduced daylight, Unoccupied – Lighting OFF

Night, Unoccupied – Lighting OFF

Detection diagrams

Plan view of detection zone

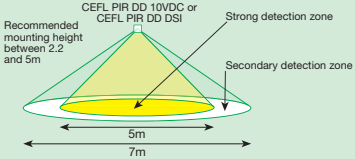


Strong detection zone i.e. person moving arm

Secondary detection zone i.e. person walking

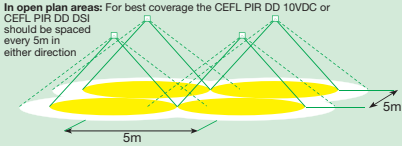
PIR Quad detector gives 124 detection areas within the zone

Perspective view of detection zone



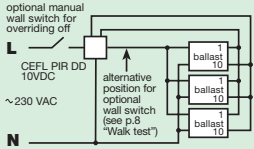
Several PIR occupancy switches

In open plan areas: For best coverage the CEFL PIR DD 10VDC or CEFL PIR DD DSI should be spaced every 5m in either direction

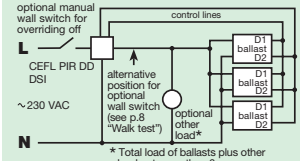


Wiring diagrams

21. CEFL PIR DD 10VDC controlling several 1-10VDC dimmable ballasts



22. CEFL PIR DD DSi controlling several DSI digital dimmable ballasts



* Total load of ballasts plus other load not more than 6 amps